

> d his

(FILE 'HOME' ENTERED AT 10:21:54 ON 14 AUG 2003)

FILE 'CAPLUS, INSPEC' ENTERED AT 10:22:09 ON 14 AUG 2003

L1	24850 S (DIFFERENT OR MIXED OR ASSYMETRIC? OR ASYMMETRIC? OR MIXTURE
L2	148 S (AZO OR AZOIC OR DIAZID?) AND L1
L3	13 S (OPTICAL OR LASER OR INFORMATION OR FILTER) AND L2
L4	30565 S (DIFFERENT OR MIXED OR ASSYMETRIC? OR ASYMMETRIC? OR MIXTURE
L5	226 S (AZO OR AZOIC OR DIAZID?) AND L4
L6	2012 S (OPTICAL OR LASER OR INFORMATION OR FILTER) AND L4
L7	25 S (OPTICAL OR LASER OR INFORMATION OR FILTER) AND L5
L8	12 S L7 NOT L3

=> log y

COST IN U.S. DOLLARS

SINCE FILE	TOTAL
ENTRY	SESSION
133.51	133.72

FULL ESTIMATED COST

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE	TOTAL
ENTRY	SESSION
-14.32	-14.32

CA SUBSCRIBER PRICE

STN INTERNATIONAL LOGOFF AT 10:26:51 ON 14 AUG 2003

**WEST**

Generate Collection

Print

L15: Entry 64 of 136

File: JPAB

Dec 14, 1992

PUB-NO: JP404361088A  
DOCUMENT-IDENTIFIER: JP 04361088 A  
TITLE: OPTICAL RECORD MEDIUM

PUBN-DATE: December 14, 1992

## INVENTOR-INFORMATION:

NAME

COUNTRY

MAEDA, SHUICHI

IMAMURA, SATORU

## ASSIGNEE-INFORMATION:

NAME

COUNTRY

MITSUBISHI KASEI CORP

APPL-NO: JP03137566

APPL-DATE: June 10, 1991

US-CL-CURRENT: 428/457; 430/270.15

INT-CL (IPC): B41M 5/26; G11B 7/24

## ABSTRACT:

PURPOSE: To obtain optical record medium with high reflection coefficient of 65% or above having excellent light resistance by providing at recording layer containing 1 or 2 or more kinds of azo metal chelate compounds of azo compound and metal to be shown by a specific general formula.

CONSTITUTION: An optical record medium is constituted of a recording layer, a metal reflecting layer and a protective layer laid in sequence on a substrate. The optical record medium has a reflection coefficient of 65% or above and the recording layer contains 1 or 2 or more kinds of azo metal chelate compounds of azo compound and metal to be shown by the formula I, where A represents residue forming heterocycle together with carbon atom and nitrogen atom to which it is combined, B represents residue forming aromatic nucleus or heterocycle together with two carbon atoms to which it is combined, and X denotes group having active hydrogen.

COPYRIGHT: (C)1992, JPO&amp;Japio

**WEST****End of Result Set**

Generate Collection

Print

L1: Entry 2 of 2

File: DWPI

Dec 14, 1992

DERWENT-ACC-NO: 1993-032761

DERWENT-WEEK: 200017

COPYRIGHT 2003 DERWENT INFORMATION LTD

TITLE: High reflectance optically recorded medium for compact disc - obtd. by laminating a recorded layer contg. azo metal chelate cpds., a metallic reflecting layer and a protective layer on a substrate, etc.

## PATENT-ASSIGNEE:

ASSIGNEE

MITSUBISHI KASEI CORP

CODE

MITU

PRIORITY-DATA: 1991JP-0137566 (June 10, 1991)

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>JP 04361088 A</u>	December 14, 1992		022	B41M005/26
JP 3019469 B2	March 13, 2000		022	B41M005/26

## APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 04361088A	June 10, 1991	1991JP-0137566	
JP 3019469B2	June 10, 1991	1991JP-0137566	
JP 3019469B2		JP 4361088	Previous Publ.

INT-CL (IPC): B41M 5/26; G11B 7/24

ABSTRACTED-PUB-NO: JP 04361088A

## BASIC-ABSTRACT:

The medium is obtd. by laminating a recorded layer (A) contg. one or more azo metal chelate cpd(s). of formula (I) composed of azo cpds. pref. of formula (II) or (III) and metals, a metallic reflecting layer and a protective layer on a substrate. In formulae, A is a residue composed of a heterocyclic ring with C and N; B is a residue which composes an aromatic ring or a heterocyclic ring with two C atoms; X is a gp. having active H; and R1 and R2 are H, alkyl, aryl, alkenyl or cycloalkyl.

USE/ADVANTAGE - The high reflectance and high sensitivity optically recorded medium is used as a recordable compact disc medium. It is high in light resistance and stability for preservation

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: HIGH REFLECT OPTICAL RECORD MEDIUM COMPACT DISC OBTAIN LAMINATE RECORD LAYER CONTAIN AZO METAL CHELATE COMPOUND METALLIC REFLECT LAYER PROTECT LAYER SUBSTRATE

DERWENT-CLASS: A89 E21 E23 G06 L03 P75 T03 W04

WEST



Generate Collection

Print

L14: Entry 4 of 12

File: JPAB

Jan 13, 1998

PUB-NO: JP410006651A  
DOCUMENT-IDENTIFIER: JP 10006651 A  
TITLE: PHOTORECORDING MEDIUM

PUBN-DATE: January 13, 1998

## INVENTOR-INFORMATION:

NAME

COUNTRY

UENO, YASUNOBU

SATO, TSUTOMU

TOMURA, TATSUYA

SASA, NOBORU

MARUYAMA, KATSUJI

## ASSIGNEE-INFORMATION:

NAME

COUNTRY

RICOH CO LTD

APPL-NO: JP08181605

APPL-DATE: June 21, 1996

INT-CL (IPC): B41 M 5/26; C09 B 45/14; G11 B 7/24

## ABSTRACT:

PROBLEM TO BE SOLVED: To provide a recording material for a CD-R medium which enables data recording and regeneration under an existing system and also enables the regeneration even under a next generation high density optical disk system by providing a recording layer containing at least, a kind of azo complex compounds expressed by a specific formula on a substrate.

SOLUTION: A recording layer containing at least, a kind of azo complex compounds expressed by formula (wherein M is a divalent metal atom, a trivalent metal atom; X is an H atom, a methyl group; R1-R16 are an H atom, a nitro group, a halogen atom, an amino group and a hydroxyl group; Y is an H atom, a metal ion and an ammonium ion) is formed on a substrate to form a photorecording medium. In addition, it is preferable to add an organic color with a maximum absorption wavelength of 680-750nm such as a cyanine color, phthalocyanine color or azo metal chelate color to the recording layer together with the azo complex compound. Further, it is preferable to form the recording layer which enables data recording using a laser beam with the absorption wavelength of 630-720nm.

COPYRIGHT: (C)1998,JPO

## \* NOTICES \*

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

DETAILED DESCRIPTION

---

## [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] About a record medium, by irradiating especially a light beam, this invention produces an optical change of the permeability of record material, a reflection factor, etc., and relates to the optical recording medium which can perform informational record and reproduction and can be added.

[0002]

[Description of the Prior Art] The oscillation wavelength of used laser is in 770nm - 790nm, and the record medium consists of present postscript light type disk systems (WORM, CD-R) so that it can record and reproduce on the above-mentioned wavelength. From now on, in connection with increase of amount of information, the flow to large-capacity-izing of a record medium will be indispensable. Therefore, it is also expected easily that it happens inevitably that the laser wavelength used for record and reproduction short-wavelength-izes. Much proposals which used a cyanine dye and phthalocyanine dye as a record material are made as \*\*\*\* and a postscript light type disk for data. (For example, to the thing using the cyanine dye as a record material) JP,57-82093,A, JP,58-56892,A, JP,58-112790,A, JP,58-114989,A, JP,59-85791,A, JP,60-83236,A, JP,60-89842,A and JP,61-25886,A each official report etc. to the thing using phthalocyanine dye as a record material again JP,61-150243,A, JP,61-177287,A, JP,61-154888,A, JP,61-246091,A, JP,62-39286,A, JP,63-37791,A, JP,63-39888,A each official report etc. -- it is -- it excels in lightfastness and preservation stability, and the present condition is that the record material which can be recorded and reproduced is not yet developed in the optical pickup using laser 700nm or less

[0003] The present CD-R disk system also consists of 770nm - 790nm which is the oscillation wavelength of used laser so that it can record and reproduce. Large-capacity-izing and short-wavelength-izing of record / reproduction wavelength are indispensable like [ this system ] the above. Reproduction is possible, even if, as for this point, the present CD, and CD-ROM, future and laser wavelength is short-wavelength-ized by having coated aluminum on the irregularity of the substrate itself, since the wavelength dependency of the reflection factor of aluminum is small. However, since [ by which a high reflection factor is obtained from the optical constant and thickness composition at 770nm - 790nm using the coloring matter which, as for CD-R, has the maximum absorption wavelength at 680nm - 750nm at a record layer ] an appearance setup has been carried out, in a wavelength region 700nm or less, a reflection factor is very low, and it cannot respond to short wavelength-ization of laser wavelength, but the information currently recorded and reproduced by the present CD-R system causes the unreproducible situation in a future system. Much proposals which used the cyanine dye/metallic reflective layer, the phthalocyanine dye/metallic reflective layer, or the azo metal chelate coloring matter / metallic reflective layer as a record material are made as a CD-R until now. (For example, to the thing using the cyanine dye/metallic reflective layer as a record material) JP,1-159842,A, JP,2-42652,A, JP,2-13656,A, and JP,2-168446,A each official report etc. to the thing using phthalocyanine dye as a record material JP,1-176585,A, JP,3-215466,A, JP,4-113886,A, JP,4-226390,A, JP,5-1272,A, JP,5-171052,A, JP,5-116456,A, JP,5-69860,A, and JP,5-139044,A each official report etc. again to the thing using azo metal chelate coloring matter as a record material JP,4-46186,A, JP,4-141489,A, JP,4-361088,A, and JP,5-279580,A each official report etc. -- it is -- what gives solution to such a point is not yet found out

[0004]

[Problem(s) to be Solved by the Invention] Therefore, let this invention be the offering [ are made in view of the above situations, while offering a record material excellent in lightfastness applicable to the high-density optical disk system using the semiconductor laser which has oscillation wavelength in short wavelength compared with a system conventionally / above-mentioned /, and preservation stability for optical recording media, can record and reproduce by the present condition system, and ]-also in high-density optical disk system of the next generation-reproducible record material for CD-R media purpose.

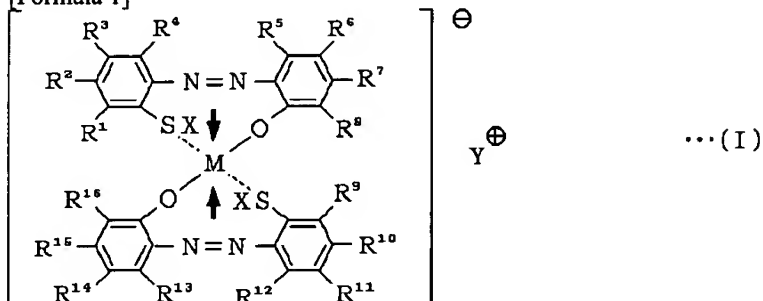
[0005]

[Means for Solving the Problem] This invention persons by preparing the record layer which makes a principal component the coloring matter which has specific structure as a result of repeating examination wholeheartedly By finding out that it can apply to the high-density optical disk system using semiconductor laser with an oscillation wavelength of 700nm or less, mixing with the organic coloring matter used as a record material for the present CD-R, and using this coloring matter further It finds out that it is possible to obtain a high reflection factor also in a wavelength region 700nm or less, and came to complete this invention.

[0006] That is, according to this invention, in the optical recording medium which comes to prepare a record layer at least on a substrate, the optical recording medium which contains at least one sort of the azo system complex compound shown by the

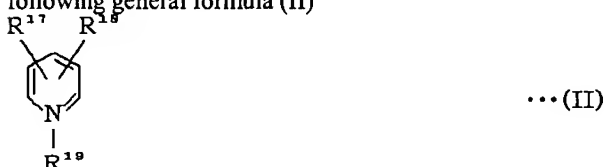
following general formula (I) in the aforementioned record layer, and is characterized by the bird clapper is offered in the first place.

[Formula 1]



M, X, R1-R16, and Y express the following among [formula, respectively.

M: A metal atom or a trivalent metal atom, divalent X: hydrogen atom, or a divalent methyl group, X: -- a hydrogen atom or a methyl group, R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14 and R15, and R16: -- respectively -- independent -- a hydrogen atom -- A nitro group, a halogen atom, the amino group, a monoalkylamino machine, a dialkylamino machine, A hydroxyl group or an alkoxy group, Y: The fourth class pyridinium derivative, [Formula 2] which are expressed with the aliphatic ammonium ion which is not replaced [ a hydrogen atom, a metal ion, an ammonium ion, substitution, or ] or the following general formula (II)



R17 and R18: -- respectively -- independent -- alkyl group which is not replaced [ the alkoxy group which is not replaced / the vinyl group which is not replaced / the alkyl group which is not replaced / a hydrogen atom, substitution, or /, substitution, or /, substitution, or / or a halogen atom, R19: substitution, or ] ]

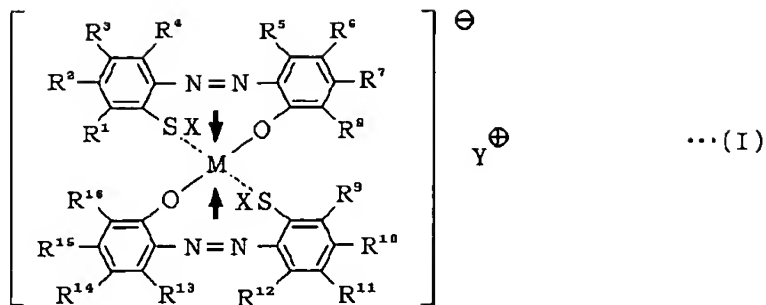
The optical recording medium indicated in the first place [ above-mentioned ] characterized by being the postscript compact disk type record medium which comes to prepare a reflecting layer and a protective layer at the order further on the aforementioned record layer, and records CD format signal on the second is offered. The third is provided with the optical recording medium indicated to the above-mentioned first the above-mentioned aforementioned record layer contains at least one sort of the compound shown by the aforementioned general formula (I), and the organic coloring matter which has the maximum absorption wavelength in 680nm - 750nm, and is characterized by the bird clapper, or the second. The optical recording medium indicated to the above third whose organic coloring matter which has [ fourth ] the maximum absorption wavelength in 680nm - the aforementioned 750nm is at least one sort of a cyanine dye, phthalocyanine dye, and azo metal chelate coloring matter is offered. The optical recording medium indicated to the above-mentioned first which is what is recorded on the fifth by the laser beam whose aforementioned record layer is the wavelength of 630-720nm - the fourth either is offered. The optical recording medium indicated to the above third which is what is recorded on the sixth by the laser beam whose aforementioned record layer is the wavelength of 770-830nm, or the fourth is offered.

[0007] Since the optical recording medium of this invention prepared the record layer containing at least one sort of the azo system complex compound shown by the aforementioned general formula (I), by the laser beam of a wavelength region 700nm or less, it can record and it can be reproduced. It becomes the thing excellent in lightfastness and preservation stability. and in another mode From having prepared at least one sort of the compound shown by the aforementioned general formula (I), and the record layer set to 680-750nm from mixture with the organic coloring matter which has the maximum absorption wavelength Even if it can use it as a CD-R medium in a present condition system and moreover becomes the high-density optical disk system of the next generation, it becomes what has possible reproducing the indicated information.

[0008]

[Embodiments of the Invention] Hereafter, this invention is explained in detail. The optical recording medium of this invention contains at least one sort of the azo system complex compound shown by the following general formula (I) in a record layer, and is characterized by the bird clapper.

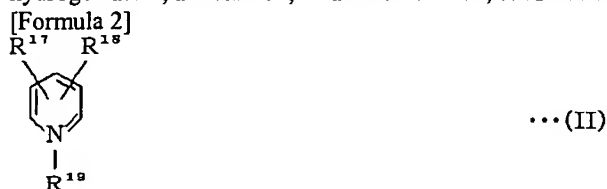
[Formula 1]



[0009] First, the azo system complex compound shown by the above-mentioned general formula (I) used by this invention is explained. It sets to the above-mentioned general formula (I), and trivalent metal atoms, such as divalent metal atoms, such as calcium, Mg, Zn, Cu, nickel, Pd, Fe, Pb, Co, Pt, Cd, and Ru, and aluminum, In, Fe, Cr, Ga, Tl, Mn, are mentioned as an example of M.

[0010] X expresses a hydrogen atom or a methyl group, and R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, R<sup>15</sup>, and R<sup>16</sup> express a hydrogen atom, a nitro group, a halogen atom, the amino group, a monoalkylamino machine, a dialkylamino machine, a hydroxyl group, or an alkoxy group independently, respectively.

[0011] Y expresses the fourth class pyridinium derivative expressed with the aliphatic ammonium ion which is not replaced [ a hydrogen atom, a metal ion, an ammonium ion, substitution, or ] or the following general formula (II).



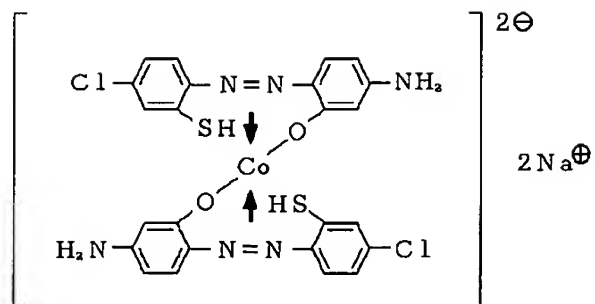
However, R<sup>17</sup> and R<sup>18</sup> express independently the alkoxy group which is not replaced [ the vinyl group which is not replaced / the alkyl group which is not replaced / a hydrogen atom substitution, or /, substitution, or /, substitution, or ] or a halogen atom among an upper formula, respectively, and R<sup>19</sup> expresses the alkyl group which is not replaced [ substitution or ].

[0012] That the example of the azo system complex compound shown by the aforementioned general formula (I) of this invention is indicated to be by table 1-(1) - table 1-(8) is mentioned. In addition, Me expresses a methyl group among Table 1.

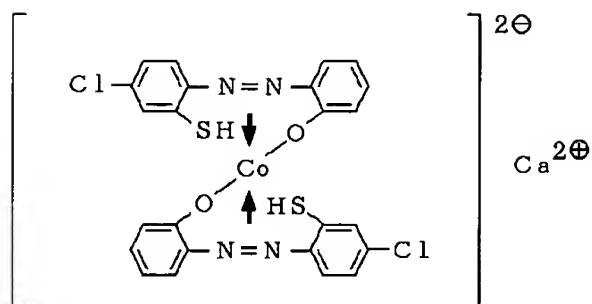
[0013]

[Table 1-(1)]

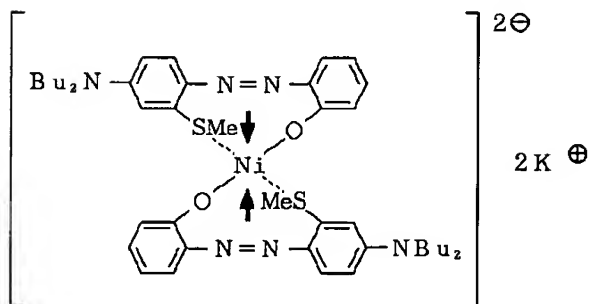
化合物例 1



化合物例 2



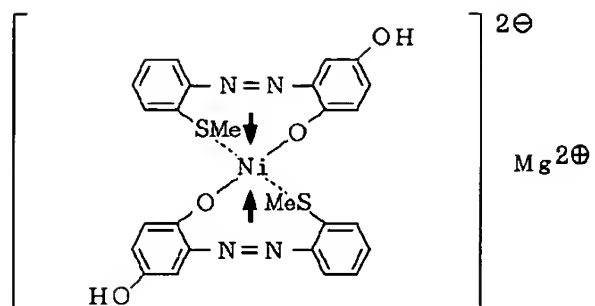
化合物例 3



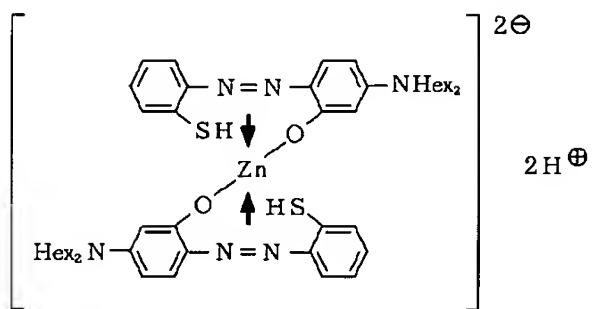
[0014]  
[Table 1-(2)]



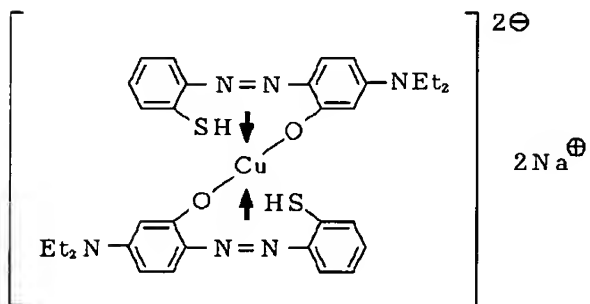
化合物例 4



化合物例 5

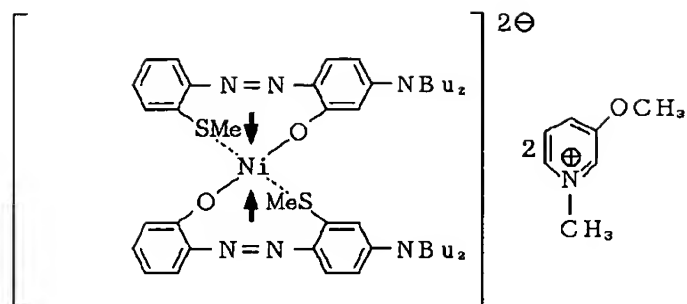


化合物例 6

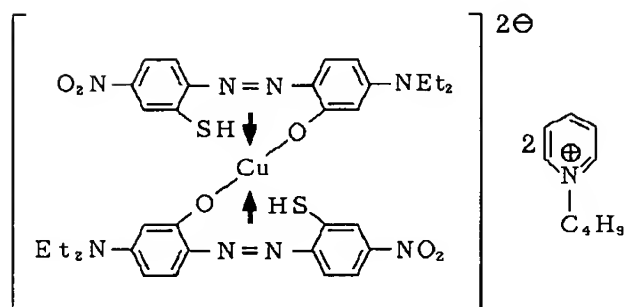


[0015]  
[Table 1-(3)]

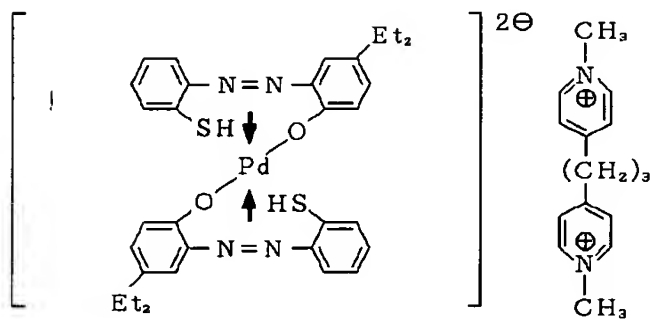
化合物例 7



化合物例 8

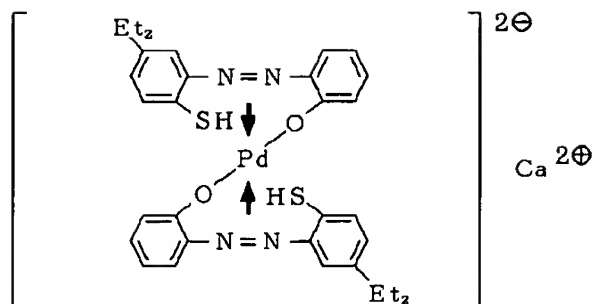


化合物例 9

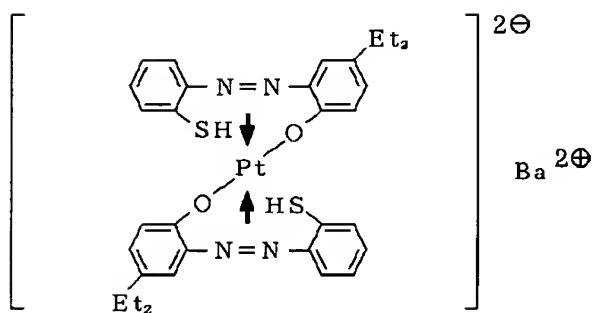


[0016]  
[Table 1-(4)]

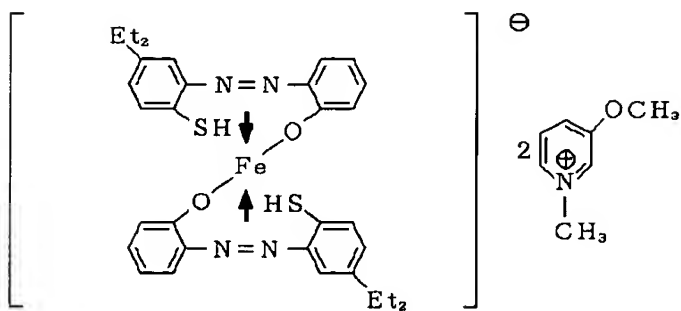
化合物例 10



化合物例 11

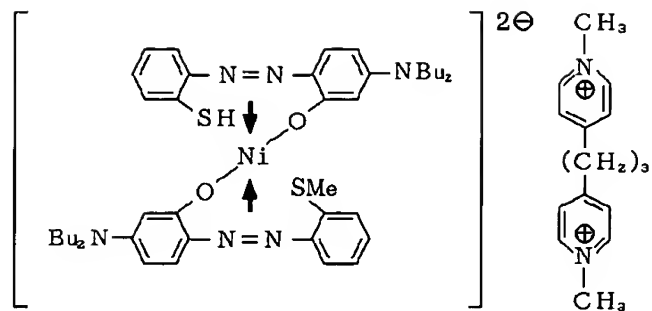


化合物例 12

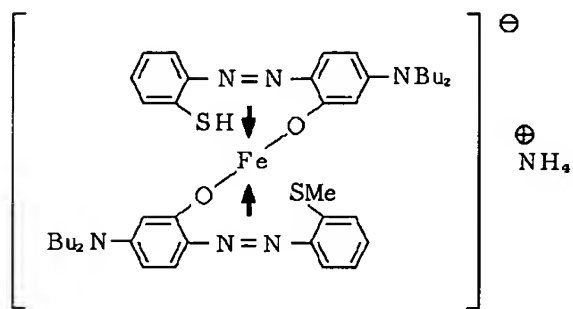


[0017]  
[Table 1-(5)]

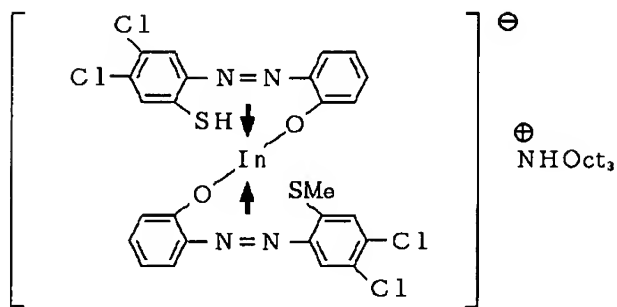
化合物例 13



化合物例 14



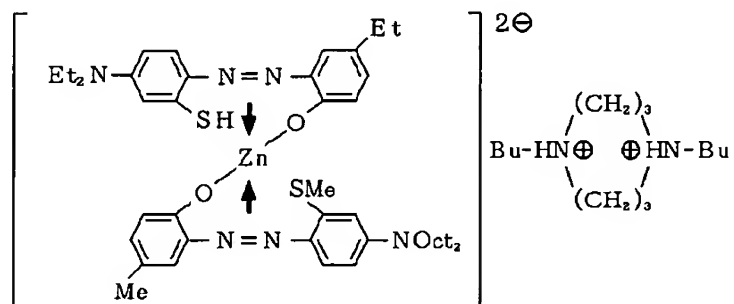
化合物例 15



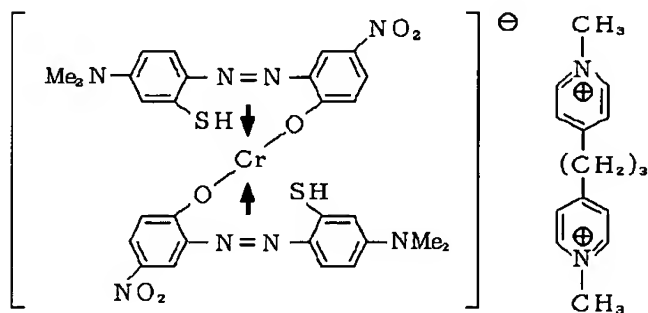
[0018]

[Table 1-(6)]

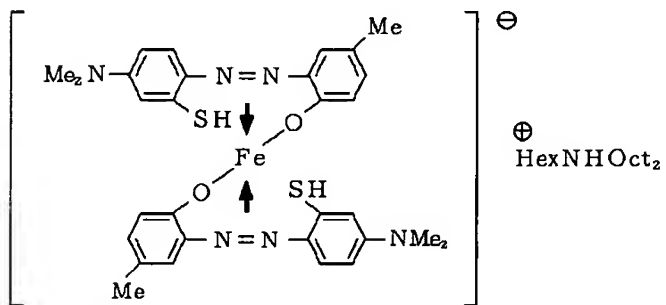
化合物例 16



化合物例 17

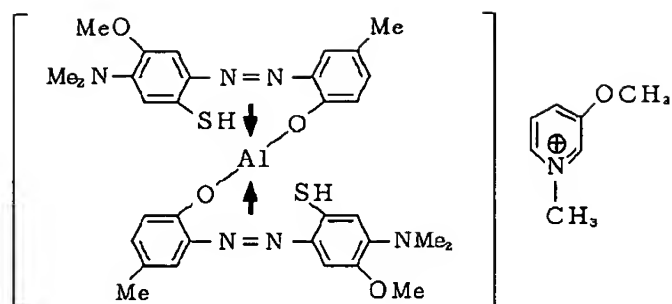


化合物例 18

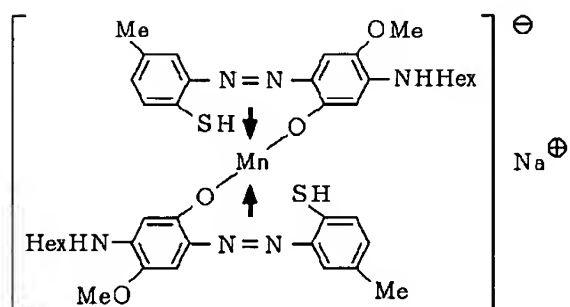


[0019]  
[Table 1-(7)]

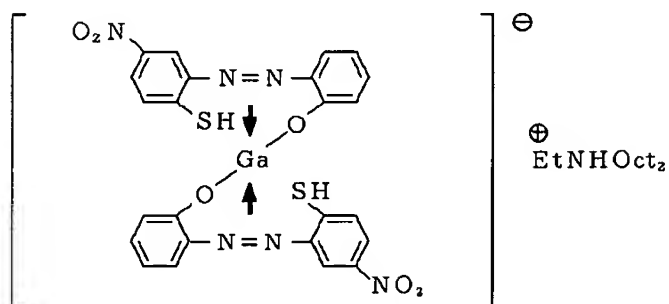
化合物例 19



化合物例 20

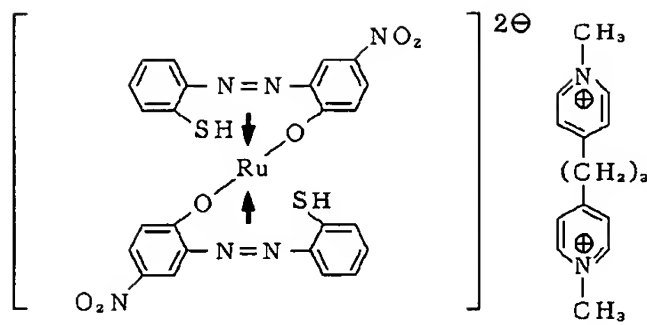


化合物例 21

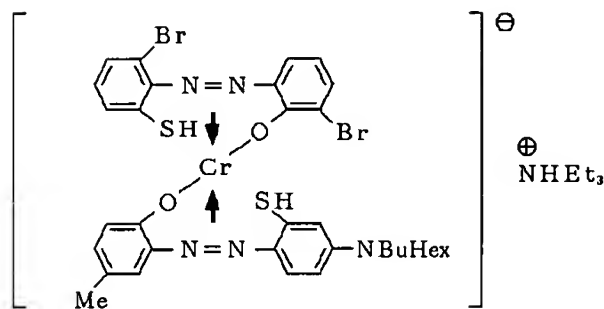


[0020]  
[Table 1-(8)]

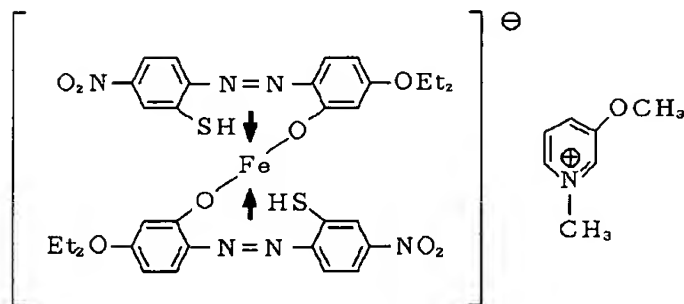
化合物例 2 2



化合物例 2 3

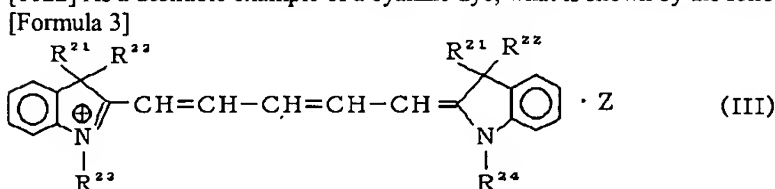


化合物例 2 4



[0021] Moreover, in a record layer, as described above, while record reproduction is possible in a present condition system by making into a principal component at least one sort of compounds shown by the aforementioned general formula (I), and mixture with the organic coloring matter which has the maximum absorption wavelength in 680-750nm, also in a next-generation system, only reproduction serves as a possible CD-R record medium. As coloring matter which has the maximum absorption wavelength in 680-750nm in this case, a cyanine dye (especially cyanine dye of a pentamethine), phthalocyanine dye, and azo metal chelate coloring matter are desirable.

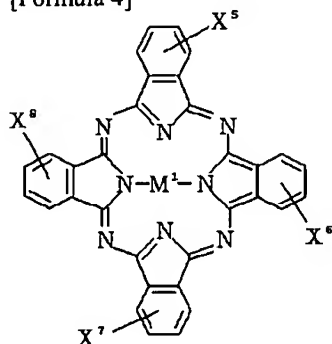
[0022] As a desirable example of a cyanine dye, what is shown by the following general formula (III) is mentioned.



The alkyl group of carbon numbers 1-3, and R23 and R24 express the alkyl group which is not replaced [ the substitution of carbon numbers 1-6, or ], and, in the inside of a formula, and R21 and R22, Z expresses an acid anion. In addition, the aromatic ring may condense with other aromatic rings, and may be replaced by the alkyl group, the halogen atom, the alkoxy group, or the acyl group.

[0023] As a desirable example of phthalocyanine dye, the following general formula (IV-1) or (IV-2) the thing shown is mentioned.

[Formula 4]

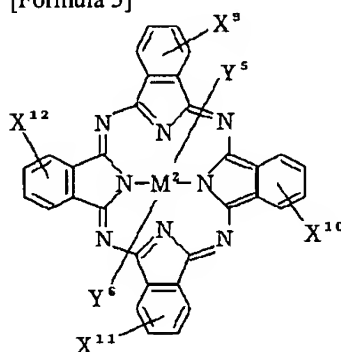


(IV-1)

The inside of a formula and M1 express the straight chain, branching, the alicyclic alkyl group, or the aryl group that may similarly be replaced of the carbon numbers 3-12 by which X5-X8 may be replaced in nickel, Pd, Cu, Zn, Co, Mn, Fe, TiO, or VO, and R may be replaced in -OR or -SR of a substitution position alpha position respectively and independently. The substituent of the benzene rings other than X5 - X8 is a hydrogen atom or a halogen atom.

[0024]

[Formula 5]

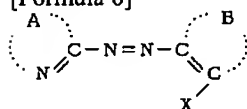


(IV-2)

As for M2, X9-X12 independently Si, germanium, In, or Sn among a formula, respectively -OR or -SR of a substitution position alpha position R the straight chain, branching, the alicyclic alkyl group, or the aryl group that may similarly be replaced of the carbon numbers 3-12 which may be replaced Y5 and Y6 express -OSiR 25R26R27, -OCOR 25R26R27, or -OPOR 25R26R27, and R25-R27 express the alkyl group or aryl group of carbon numbers 1-10 independently, respectively. The substituent of the benzene rings other than X9 - X12 is a hydrogen atom or a halogen atom.

[0025] Moreover, as a desirable example of azo metal chelate coloring matter, one sort of the azo metal chelate compound of the azo system compound and metal which are shown by the following general formula (V), or two sorts or more are mentioned, and nickel, Pt, Pd, Co, Cu, Zn, etc. are mentioned as a metaled desirable example.

[Formula 6]



(V)

A expresses among a formula the residue which becomes together with the carbon atom and nitrogen atom which it has combined, and forms a heterocycle, and B expresses the residue which becomes together with two carbon atoms which it has combined, and forms a ring or a heterocycle, and X expresses the basis which has active hydrogen.

[0026] the weight-composition ratio in the case of using together at least one sort of coloring matter shown by at least one sort of coloring matter shown by the aforementioned general formula (I) of this invention, and aforementioned general formula (III) - (V) -- this invention coloring matter / [(III) coloring matter of - (V)] = 10 / 100 - 90/100 -- it is 40 / 100 - 20/100 preferably. Moreover, 500A - 5 micrometers of thickness of the record layer at the time of using both coloring matter together are 1000A - 5000A preferably.

[0027] Next, the composition of the record medium of this invention is described. Drawing 1 is drawing showing the example of lamination which can be applied to the record medium of this invention, and this is the example of a write once optical disk. On the substrate 1, the record layer 2 is formed through the under-coating layer 3 if needed, and the protective layer 4 is formed further if needed. Moreover, the hard-coat layer 5 can be formed in the bottom of a substrate 1 if needed. Drawing 2 is drawing showing the example of lamination another type which can be applied to the record medium of this invention, and this is the example of CD-R media. The reflecting layer 6 is formed on the record layer 2 of the composition of drawing 1. In addition, you



may make the record medium of this invention into the lamination structure which could \*\*\*\* the record layer (organic thin film layer) of composition of having been shown in drawing 1 and drawing 2 inside, and could make the air sandwich structure sealed through other substrates and space, and was pasted up through the protective layer.

[0028] Next, the required property of composition each class and its component are described.

1) Although it must be transparent to a use laser beam as a required property of a substrate substrate when performing record reproduction from a substrate side, it does not need to be transparent when performing record reproduction from a record layer side. As a substrate material, plastics, such as polyester, acrylic resin, a polyamide, polycarbonate resin, polyolefin resin, phenol resin, an epoxy resin, and a polyimide, glass, a ceramic, or a metal can be used, for example. In addition, the pre format of the guide rail for tracking, a guidance pit, an address signal, etc., etc. may be formed in the front face of a substrate.

[0029] 2) A record layer record layer produces a certain optical change by irradiation of a laser beam, and can record information by the change, in this record layer, it is required for at least one sort of the compound shown by the aforementioned general formula (I) to contain, and the compound shown by the aforementioned general formula (I) in formation of a record layer may be used in one sort or two sorts or more of combination. Furthermore, of course, these coloring matter can also be mixed, or laminated and used with other organic coloring matters and a metal, and metallic compounds because of improvement in an optical property, record sensitivity, and a signal property. As other organic coloring matters in this case, poly methine coloring matter, a naphthalocyanine system, a phthalocyanine system, a squarylium system, a crocodile NIUMU system, a pyrylium system, a naphthoquinone system, an anthraquinone (indanthrene) system, a xanthene system, a triphenylmethane-color system, an azulene system, a tetrahydro choline system, a phenanthrene system, a TORIFENO thiazin system color, a metal complex compound, etc. are mentioned. Moreover, as a metal and an example of metallic compounds, In, Te, Bi, Se, Sb, germanium, Sn, aluminum, Be, TeO<sub>2</sub>, SnO, As, Cd, etc. are mentioned, and each can be used with the gestalt of distributed mixture or a laminating. Furthermore, into the above-mentioned color, distributed mixture of a various material or various silane coupling agents, such as polymeric materials, for example, an ionomer resin, polyamide resin, a vinyl system resin, naturally-occurring polymers, silicone, and liquid rubber, etc. may be carried out, and it can use for the purpose of property improvement together with a stabilizer (for example, transition metal complex), a dispersant, a flame retarder, lubricant, an antistatic agent, a surfactant, a plasticizer, etc.

[0030] The usual meanses, such as vacuum evaporation, sputtering, CVD, or a solvent application, can perform formation of a record layer. When using the applying method, the above-mentioned color etc. can be dissolved in the organic solvent, and it can carry out by the method of coating common use, such as a spray, roller coating, dipping, or spin coating. Generally as an organic solvent used, alcohols, such as a methanol, ethanol, and an isopropanol, Ketones, such as an acetone, a methyl ethyl ketone, and a cyclohexanone Amides, such as N and N-dimethylacetamide and N.N-dimethylformamide Sulfoxides, such as dimethyl sulfoxide, a tetrahydrofuran, Ether, such as a dioxane, diethylether, and an ethylene glycol monomethyl ether, Ester, such as methyl acetate and ethyl acetate, chloroform, a methylene chloride, Aliphatic halocarbons, such as a dichloroethane, a carbon tetrachloride, and trichloroethane Hydrocarbons, such as Cellosolves, such as aromatic [ , such as benzene, a xylene, a monochlorobenzene, and a dichlorobenzene, ] or methoxy ethanol, and ethoxy ethanol, a hexane, a pentane, a cyclohexane, and a methylcyclohexane, are mentioned. 100A - 10 micrometers 200A - 2000A is preferably suitable for the thickness of a record layer.

[0031] 3) An under-coating layer under-coating layer is used for the purpose of formation of improvement in the preservation stability of the barrier to improvement, \*\* water, or gas of \*\* adhesive property etc., and \*\* record layer, improvement in \*\* reflection factor, protection of the substrate from \*\* solvent, \*\* guide rail, a guidance pit, and a pre format etc. As opposed to the purpose \*\* Polymeric materials, for example, an ionomer resin, a polyamide, Can use a various high molecular compound, various silane coupling agents, etc., such as a vinyl system resin, natural resin, naturally-occurring polymers, silicone, and liquid rubber, and the purpose of \*\* and \*\* is received. There is an inorganic compound, for example, SiO<sub>2</sub>, MgF<sub>2</sub>, SiO, TiO<sub>2</sub>, ZnO, TiN, SiN, etc., in addition to the above-mentioned polymeric materials, and a metal or a semimetal, for example, Zn, Cu, nickel, Cr, germanium, Se, Au, Ag, aluminum, etc., can be used further. Moreover, to the purpose of \*\*, a metal, for example, aluminum, Au, Ag, etc., the organic thin film which has metallic luster, for example, a methine dye, a xanthene system color, etc. can be used, and ultraviolet-rays hardening resin, a heat-curing resin, thermoplastics, etc. can be used to the purpose of \*\* and \*\*. 0.01-30-micrometer 0.05-10 micrometers are preferably suitable for the thickness of an under-coating layer.

[0032] 4) A reflecting layer reflecting layer can use a metal, a semimetal, etc. from which a high reflection factor is obtained alone and which are hard to be corroded. As an example of material, Au, Ag, aluminum, Cr, nickel, Fe, Sn, etc. are mentioned, and Au, Ag, and aluminum are the most desirable from the point of a reflection factor and productivity. These metals and a semimetal may be used independently and are good also as two or more sorts of alloys. Vacuum evaporation, sputtering, etc. are mentioned as a film forming method, and 50-5000A is 100-3000A preferably as thickness.

[0033] 5) A protective layer, a substrate surface hard-coat layer protective layer, or a substrate surface hard-coat layer is used for the purpose of improvement in the preservation stability of \*\* record layer (reflective absorption layer) which protects \*\* record layer (reflective absorption layer) from a blemish, dust, dirt, etc., improvement in \*\* reflection factor, etc. To these purposes, the material shown in the aforementioned under-coating layer can be used. Moreover, SiO, SiO<sub>2</sub>, etc. can also be used as inorganic material, and thermosoftening [ , such as poly methyl acrylate a polycarbonate, an epoxy resin, polystyrene, polyester resin, vinyl resin a cellulose, an aliphatic hydrocarbon resin, natural rubber, styrene-butadiene resins, chloroprene rubber, a wax, an alkyl resin, drying oil, and rosin, ] and a thermofusion nature resin can also be used as an organic material. The most desirable thing is ultraviolet-rays hardening resin excellent in productivity among the above-mentioned material. 0.01-30-micrometer 0.05-10 micrometers are preferably suitable for the thickness of a protective layer or a substrate surface hard-coat layer.

[0034] The aforementioned under-coating layer, a protective layer, and a substrate surface hard-coat layer can be made to contain a stabilizer, a dispersant, a flame retarder, lubricant, an antistatic agent, a surfactant, a plasticizer, etc. like the case of a record layer in this invention.

[0035]

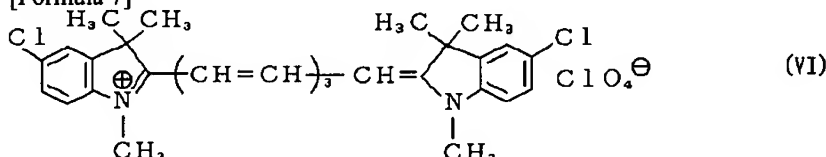
[Example] although this invention is explained about an example below -- this invention -- it is not limited to these

[0036] On the substrate which formed a depth of 1200A, the half-value width of 0.4 micrometers, and the track pitch 1.4micrometer guide rail in the photopolymer on the polymethylmethacrylate substrate with an example 1 example 1 thickness of 1.2 micrometers, the spinner application of the chloroform solution of compound example No.1 was carried out, the record layer with a thickness of 800A was prepared, and the record medium was obtained.

[0037] In two to example 8 example 1, the record medium of examples 2-8 was obtained like the example 1 instead of compound example No.1 except having used compound example No.2, No.3, No.4, No.5, No.6, No.7, and No.8.

[0038] In example of comparison 1 example 1, the record medium of the example 1 of comparison was obtained like the example 1 except having used the compound shown by the following formula (VI) instead of compound example No.1.

[Formula 7]



[0039] Using the record medium of the aforementioned examples 1-8 and the example 1 of comparison, incidence of the light was carried out, it was recorded from the substrate on the following record conditions, and C/N ratio and the reflection factor were measured for the record position by reproduction light after that. The result is shown in Table 2.

Record conditions : Laser oscillation wavelength 680nm Record frequency 1.25MHz Record linear velocity 1.2 m/sec

Reproduction conditions : Laser oscillation wavelength 680nm Reproduction power 0.25-0.3mW continuation light scanning band width 30kHz Light-proof test condition: Light-proof test 40,000Lux, Xe light, 50-hour continuous irradiation Preservation test 85degree C, 85%, 720-hour neglect [0040]

[Table 3]

	初期値		耐光テスト後		保存テスト後	
	反射率 (%)	C/N比 (dB)	反射率 (%)	C/N比 (dB)	反射率 (%)	C/N比 (dB)
実施例 1	2 5	5 1	2 1	4 4	2 4	4 5
実施例 2	2 7	5 2	2 3	4 7	2 5	4 8
実施例 3	2 6	5 2	2 2	4 6	2 5	4 8
実施例 4	2 4	5 0	2 1	4 5	2 2	4 7
実施例 5	2 5	5 1	2 2	4 5	2 4	4 6
実施例 6	2 7	5 2	2 4	4 6	2 6	4 8
実施例 7	2 6	5 2	2 2	4 5	2 3	4 8
実施例 8	2 7	5 3	2 4	4 7	2 6	5 0
比較例 1	1 1	測定 不能	7	測定 不能	9	測定 不能

[0041] On an injection-molding polycarbonate substrate with a thickness of 1.2mm which has example 9 depth of 1000A, a half-value width [ of 0.4 micrometers ], and a track pitch 1.6micrometer guide rail Compound example No.9 A methylcyclohexane, a 2-methoxyethanol, The spinner application of the liquid which dissolved in the mixed solution of a methyl ethyl ketone and a tetrahydrofuran is carried out. The record layer with a thickness of 1800A was formed, subsequently to a it top, the reflecting layer of 2000A of gold was prepared by the spatter, the 5-micrometer protective layer was further prepared in the acrylic photopolymer on it, and the record medium was obtained.

[0042] In ten to example 16 example 9, the record medium of examples 10-16 was obtained like the example 9 except having used compound example No.10, No.11, No.12, No.13, No.14, No.15, and No.16 instead of compound example No.9,

respectively.

[0043] In example of comparison 2 example 9, the record medium of the example 2 of comparison was obtained like the example 9 except having used the compound shown by the aforementioned formula (VI) used in the example 1 of comparison instead of compound example No.9.

[0044] The EFM signal was recorded, using and carrying out the tracking of the oscillation wavelength of 680nm, and the semiconductor laser light of 1.4 micrometers of beam diameters to the record medium of examples 9-16 and the example 2 of comparison (linear velocity 1.4 m/sec), it reproduced with the continuation light of the same laser, and the reproduction wave was observed. The result is shown in Table 3.

[0045]

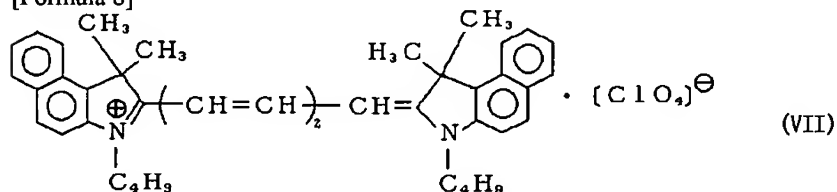
[Table 3]

	初 期 値		耐光テスト後	
	反射率 (%)	再生波形	反射率 (%)	再生波形
実施例 9	7 3	明瞭な再生波形	7 2	明瞭な再生波形
実施例10	7 5	明瞭な再生波形	7 3	明瞭な再生波形
実施例11	7 2	明瞭な再生波形	7 1	明瞭な再生波形
実施例12	7 4	明瞭な再生波形	7 2	明瞭な再生波形
実施例13	7 3	明瞭な再生波形	7 0	明瞭な再生波形
実施例14	7 5	明瞭な再生波形	7 4	明瞭な再生波形
実施例15	7 2	明瞭な再生波形	7 1	明瞭な再生波形
実施例16	7 4	明瞭な再生波形	7 3	明瞭な再生波形
比較例 2	5	測定不能	5	測定不能

[0046] On an injection-molding polycarbonate substrate with a thickness of 1.2mm which has example 17 depth of 1000A, a half-value width [ of 0.45 micrometers ], and a track pitch 1.6micrometer guide rail The compound shown by the following formula (VII), and compound example No.17 It dissolves in the methylcyclohexane of a weight ratio (1/1), a 2-methoxyethanol, a methyl ethyl ketone, and a tetrahydrofuran mixed solvent, a spinner application is carried out, and a record layer with a thickness of 1700A is formed. subsequently The reflecting layer of 2000A of gold was formed by the spatter, the 5-micrometer protective layer was further prepared in the acrylic photopolymer on it, and the record medium was obtained.

[0047]

[Formula 8]

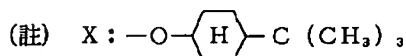
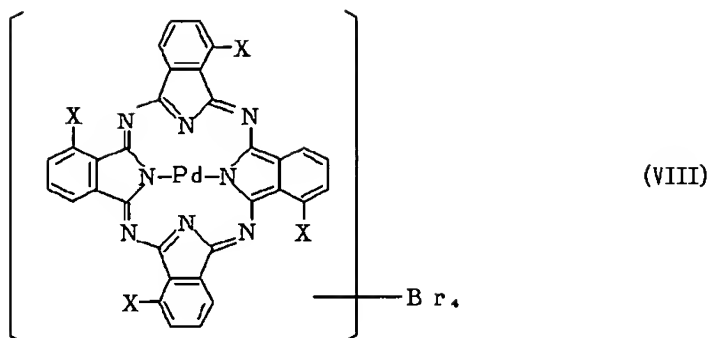


[0048] In an example 18 and 19 examples 17, the record medium of examples 18 and 19 was obtained like the example 17 except having used compound example No.18 and No.19 instead of compound example No.17, respectively.

[0049] In an example 20 and 21 examples 17, the record medium of examples 20 and 21 was obtained like the example 17 except having used the compound shown by the following formula (VIII) instead of the compound which uses compound example No.20 and No.21 instead of compound example No.17, respectively, and is shown by the aforementioned formula (VII).

[0050]

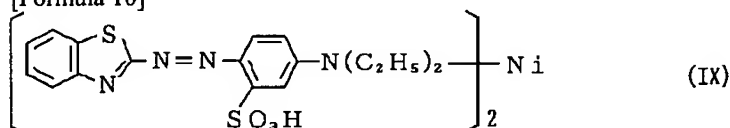
[Formula 9]



[0051] In 22 to example 24 example 17, the record medium of examples 22-24 was obtained like the example 17 except having used the compound shown by the following formula (IX) instead of the compound which uses compound example No.22, No.23, and No.24 instead of compound example No.17, respectively, and is shown by the aforementioned formula (VII).

[0052]

[Formula 10]



[0053] In three to example of comparison 5 example 17, the record medium of the examples 3-5 of comparison was obtained like the example 17 except having used the record layer only as the compound in which only the compound in which only the compound shown by the aforementioned general formula (VII), respectively is shown by the aforementioned general formula (VIII) is shown by the aforementioned general formula (IX).

[0054] The EFM signal was recorded, using and carrying out the tracking of the oscillation wavelength of 780nm, and the semiconductor laser light of 1.6 micrometers of beam diameters to the record medium of examples 17-24 and the examples 3-5 of comparison (linear velocity 1.4 m/sec), it reproduced with the aforementioned laser and the oscillation wavelength of 680nm, and the continuation light of the semiconductor laser of 1.4 micrometers of beam diameters, and the reproduction wave was observed. The result is shown in Table 4.

[0055]

[Table 4]

	発振波長780nmレーザ		発振波長680nmレーザ	
	反射率 (%)	再生波形	反射率 (%)	再生波形
実施例17	7 1	明瞭な再生波形	2 2	明瞭な再生波形
実施例18	7 3	明瞭な再生波形	2 3	明瞭な再生波形
実施例19	7 4	明瞭な再生波形	2 2	明瞭な再生波形
実施例20	7 2	明瞭な再生波形	2 4	明瞭な再生波形
実施例21	7 2	明瞭な再生波形	2 3	明瞭な再生波形
実施例22	7 5	明瞭な再生波形	2 2	明瞭な再生波形
実施例23	7 4	明瞭な再生波形	2 4	明瞭な再生波形
実施例24	7 0	明瞭な再生波形	2 1	明瞭な再生波形
比較例 3	7 5	明瞭な再生波形	5	再生不能
比較例 4	7 4	明瞭な再生波形	5	再生不能
比較例 5	7 4	明瞭な再生波形	5	再生不能

[0056]

[Effect of the Invention] Since the optical recording medium of a claim 1 shall come to contain at least one sort of the azo system complex compound shown by the aforementioned general formula (I) in a record layer and it has high optical-absorption ability and light reflex nature in wavelength of 700nm or less, it can record and reproduce by the laser beam of a wavelength region 700nm or less recordable high-density, and, moreover, it is excellent in lightfastness and preservation stability.

[0057] Since the optical recording medium of a claim 2 shall come to contain the azo system complex compound shown by the aforementioned general formula (I) in the record layer of the CD-R record medium which carried out the laminating of the reflecting layer on the record layer, shows a high refractive index to the wavelength of 770-830nm and has high stability, it can offer the CD-R record medium which was excellent in preservation stability and reproduction stability with the high reflection factor.

[0058] It becomes possible to be able to record and reproduce by the present condition system, since the optical recording medium of a claim 3 shall come to contain at least one sort of the compound shown by the aforementioned general formula (I), and the organic coloring matter which has the maximum absorption wavelength in 680-750nm in a record layer, and to reproduce the information moreover recorded also by the high-density optical disk system of the next generation.

[0059] A high-definition signal property becomes recordable from the thing of a cyanine dye, phthalocyanine dye, and azo metal chelate coloring matter for which a kind was chosen at least as an organic coloring matter to which the optical recording medium of a claim 4 has the maximum absorption wavelength in 680-750nm.

[0060] Since the optical recording medium of a claim 5 is what is recorded by the laser beam whose record layer is the wavelength of 630-720nm, compared with the optical recording medium dealing with 770-830nm, a 1.6 to 1.8 times as many densification postscript type optical recording medium as this is obtained.

[0061] Since the aforementioned record layer is recorded by the laser beam which is the wavelength of 770-830nm, the optical recording medium of a claim 6 can offer the outstanding CD-R record medium in the present system.

---

[Translation done.]